The Whatsit Corporation:
Survival Math Skills

Teacher's Guide

SUNBURST
COMMUNICATIONS

THE WHATSIT CORPORATION: SURVIVAL MATH SKILLS

Introduction

THE WHATSIT CORPORATION is a challenging simulation that allows students to run a small, one product business for six simulated months. Developed by a Waterford (Michigan) School District team under a grant from the National Science Foundation and the National Institute of Education, THE WHATSIT CORPORATION has been successfully used in schools and is ideal for the consumer mathematics class.

In THE WHATSIT CORPORATION, students may initially conduct market surveys, buy franchises, hire outside consultants, or borrow money. They then face "monthly" and "weekly" decisions to hire or lay off salespeople, order inventory, set prices, pay principal on existing loans, borrow additional money, hire accountants, and commission advertising campaigns. In addition, students keep records and pay state sales tax every three months. They must also contend with unexpected business problems such as late shipments and supply shortages.

THE WHATSIT CORPORATION uses extensive classroom activities to prepare students prior to their actually working with the simulation on the computer. Follow-up activities are also provided. While the simulation can be used by individual students, THE WHATSIT CORPORATION is specially designed as a team project. Students participating cooperatively in small groups are presented with a problem-solving environment where teamwork really counts. They can also be given the challenge of competing with other class teams.

This guide includes a complete descriptions of the program, background information, and activity answer keys, as well as masters for overhead transparencies and activity worksheets.

THE WHATSIT CORPORATION is designed for 48K Apple II with Applesoft and DOS 3.3, Apple II plus, Apple IIe, and 48K TRS-80 Model III or 4. If you need assistance operating your computer, check the "Working With the Computer" sections of this guide. You can also call Sunburst toll-free at 800-431-1934.

THE WHATSIT CORPORATION: SURVIVAL MATH SKILLS

Table of Contents

INTRODUCTION..... 1
UNIT OBJECTIVES..... 2
UNIT OVERVIEW..... 3
UNIT SEQUENCE..... 4
SIMULATION OVERVIEW..... 5

PRE-SIMULATION CLASSROOM ACTIVITIES..... 10
Introducing the Activity Sheets/Answer Keys..... 10
Activity 1 - Using Mathematical Models..... 11
Activity 2 - Reading and Graphing Equations..... 14
Activity 3 - Advertising and Sales..... 16
Activity 4 - Interest Payments and Sales Tax..... 18
Use of the Overhead Transparencies..... 19
Introducing the Simulation Worksheets..... 23
Activity 5 - Preparing for Start-Up..... 25

THE SIMULATION..... 28
Introducing the Simulation..... 28
Running the Simulation..... 28

POST SIMULATION FOLLOW-UP..... 30
Activity 6 - Evaluating the Results..... 30

MASTERS FOR CLASSROOM ACTIVITY SHEETS..... 31
MASTERS FOR OVERHEAD TRANSPARENCIES..... 41
MASTERS FOR SIMULATION WORKSHEETS..... 49
VOCABULARY LIST MASTER..... 57
Apple II: Working With the Computer..... 58
TRS-80 (diskette): Working With the Computer..... 59
"What Happens if...?" Sunburst Courseware and Warranty..... 60

Designed by the Waterford (Michigan) School District

Editors: Marge Kosel
Michael L. Roney
Susan Markey
Tom Prosen

Programmers: TRS-80 -- Walter Koetke III
Apple -- Miki Dinh
Mike Fish

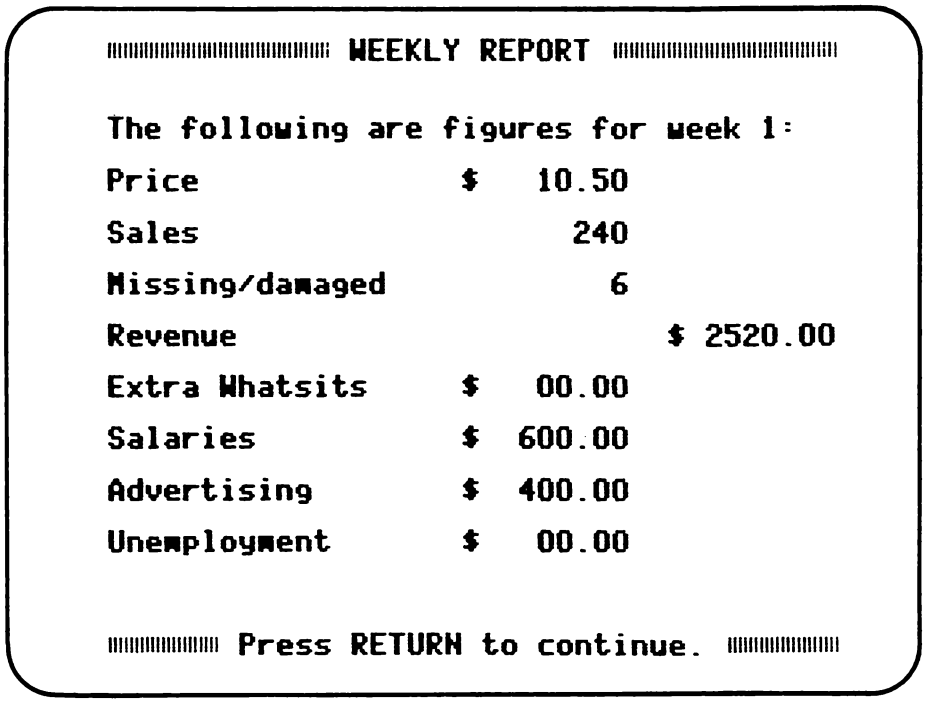
COPYRIGHT 1983
SUNBURST COMMUNICATIONS, INC.
PLEASANTVILLE, N.Y. 10570

Apple II, Apple IIplus, and Apple IIe are registered trademarks of Apple Computer, Inc., Cupertino, California.

TRS-80 is a registered trademark of Tandy Corp., Fort Worth, Texas.

For information, or a free Microcomputer Courseware Catalog, write:
SUNBURST COMMUNICATIONS, INC.
PLEASANTVILLE, N.Y, 10570

Call toll-free (800) 431-1934
(In New York, Alaska, Hawaii and Canada, call collect (914) 769-5030.)



Skills:	Calculating with whole numbers and decimals Computing simple interest Evaluating formulas Creating and using graphs
Students Work With:	Business management (personnel, research, borrowing, pricing, inventory, records) Supply and demand
Grade level:	6 - adult
Reading level:	6th grade (Fry)
Time Required:	1-5 hours for entire simulation

Objectives:

1. To provide practice in calculating, estimating, record keeping, working with equations and multiple variables, and reading graphs.
2. To teach students to use mathematics as an analytical tool in making decisions and finding solutions.
3. To provide simulated experience at running a business.
4. To develop problem-solving skills such as planning ahead, working in two time frames, and evaluating and modifying a strategy.

THE WHATSIT CORPORATION: SURVIVAL MATH SKILLS

Unit Overview

THE WHATSIT CORPORATION is made up of four integral elements:

CLASSROOM ACTIVITY SHEETS

The unit includes six classroom activity sheets that can be duplicated and given to students. Five of these are to be completed before running the simulation. They introduce and give practice in using a wide variety of valuable mathematical and business management skills. The sixth activity sheet is intended to be used as a review when the simulation is completed. Detailed information on the use of these activity sheets, including answer keys, can be found beginning on page 10 of this guide.

OVERHEAD TRANSPARENCIES

Seven overhead transparencies illustrate key screens that will be encountered by students as they work their way through the simulation. These should be presented and discussed with the entire class just prior to running the simulation. Additional information on the overheads can be found beginning on page 19.

SIMULATION WORKSHEETS

Seven simulation worksheets are also included with the unit. These serve as forms on which to keep records during the simulation, and are essential for success. The simulation worksheets are discussed in greater detail beginning on page 23.

THE SIMULATION

This is the centerpiece of the unit, providing a realistic simulation of running a small, one product business for six months. A list and explanation of its features begins on page 5.

THE WHATSIT CORPORATION: SURVIVAL MATH SKILLS

Unit Sequence

BEFORE THE SIMULATION

1. Introduce the unit with a discussion of economics and business (page 10). Use the Vocabulary List master (page 57).
2. Give a general overview of the simulation (pages 5 and 28).
3. Assign Activities 1 - 4 (page 10).
4. Display and discuss the overhead transparencies (page 19).
5. Display and discuss the simulation worksheets (page 23).
6. Assign Activity 5. Assist in its completion (page 25).
7. Discuss Activity 5 and conduct a final preliminary review of the simulation.

ON THE DAY OF THE SIMULATION

1. Organize students into small groups for running the simulation (page 28).
2. Distribute the simulation worksheets to each group (page 28).
3. Assign responsibilities for each simulation worksheet (page 28).
4. Run the simulation.

AFTER THE SIMULATION

1. Assign Activity 6. Aid in its completion (page 30).
2. Review the simulation, based on simulation worksheet data and responses to Activity 6 (page 30).
3. If time permits, allow students to run the simulation again.

THE WHATSIT CORPORATION: SURVIVAL MATH SKILLS

Simulation Overview

Following is a list of student options and major features of the simulation. Students begin with $10,000 and face preliminary, monthly, and weekly decision screens. All of the variables interact in a realistic fashion.

COMMUNITY SURVEY

As they begin, students have the option of conducting a community survey. The survey will tell them the type of community in which their Whatsit franchise will be located (low, middle, or high-income). The survey will also indicate the type of franchise -- budget, standard, or luxury -- that will do the best. Without this information, students will have a 33% chance of making the correct decision about which kind of franchise to buy. A franchise not suited for its area will not be as profitable.

BUYING A WHATSIT FRANCHISE

Following the community survey, students must decide what kind of franchise to buy: BUDGET offers low cost, no frill Whatsits for the price conscious. STANDARD offers a good Whatsit for less money and the LUXURY offers the finest quality Whatsit for discriminating customers.

HIRING AN ECONOMIST

Students have the opportunity to hire an economist who will give them formulas to use in setting prices for their Whatsits. The economist will also give students information about the number of salespeople they will need for their franchise to run efficiently. The formulas and tables the economist gives students will be the same formulas the computer uses to determine sales. The formulas for determining sales will be different each time a new simulation is started. Students can hire the economist before opening the franchise, or as one of their monthly options. For an additional fee, the economist will help students evaluate a formula and analyze the results after they have purchased the report.

OBTAINING LOANS

Students can acquire up to eight loans during the simulation. However, their total must not exceed $15,000. A loan made for cash emergencies, or any loan taken after the first two, is awarded at an interest rate higher than the prime rate for the month. Students must pay interest on a loan each month, but do not have to make payments on its principal. Students do have the monthly option of paying on the principal of a loan to reduce the interest payment. A good strategy, however, would be not to do so until their business is doing well.

STAFFING THE FRANCHISE

The Whatsit franchise comes with a manager who gives reports to the students and also acts as a salesperson. Each month, students have the option of hiring or laying off salespeople. The number of Whatsits a franchise can sell in a week is limited by the number of salespeople the franchise employs. The franchise can sell more Whatsits with a larger staff because it can serve more customers. However, if too many salespeople are hired, they compete for the same customers and total revenue is less than the additional salary costs. Students can analyze this information by hiring the economist or by studying the SALES RECORD SHEETS. Any sales people who are laid off must be paid unemployment, at the rate of $60 per week, until they are rehired.

ORDERING INVENTORY

Students have the opportunity to place an inventory order at the start of each month or as one of their weekly decisions. The monthly order is the regularly scheduled date and has a low shipping rate. Students may also order during the month if they run out of Whatsits. Orders placed at these times are considered rush orders and have a higher shipping charge. Prices for Whatsits vary with the economic conditions and with the size of the order placed. Students are charged for storing Whatsits prior to sale at the rate of $0.10 per Whatsit per week. Inventory storage costs are payed at the end of each month.

ADVERTISING

Each week, students may try to increase their sales through advertising. Advertising will increase the potential market by a given percent, based on the ad campaign a student chooses. Students are told how effective the ad campaign will be and can update their sales formulas to reflect the new conditions. Once started, an ad campaign remains in effect until it is cancelled or replaced by another campaign. After an ad campaign is cancelled, sales immediately return to pre-advertising levels.

SETTING PRICE

Each week, students have an option of setting or changing the price of Whatsits. They will initially be told the current price and asked if they want to set a new one. Students must respond with a "Y" before they can do this. If students respond with an "N" the price is left the same. If students do not choose the Set Price option, the price will remain fixed until changed.

CONTINUE/VACATION

When students have made all of the changes they wish to make for the week, the Continue option will have the computer compute sales and give students a weekly report. When students have their franchise running smoothly, the Vacation option will speed the simulation by automatically computing sales for the rest of that month without giving reports or having students repeat decisions. The vacation will be interrupted only for emergencies that require immediate action.

SAVING RESULTS

Saving results is a weekly option. Students do not need to save results unless it is near the end of the class period and they will not have time to finish the simulation. Students should be told to save results five to ten minutes before the end of the class period. When students return to the simulation, they can begin where they left off by entering their name and answering "YES" to the question "ARE YOU CONTINUING A PREVIOUS SIMULATION?"

REPORTS

Students are given weekly and monthly reports. The weekly report gives figures on sales, income, and profit for the past week. The weekly report will also include messages from the franchise manager if things are not going well. The monthly report is a summary of sales, income, and costs for the month.

MESSAGES

Students may receive the following messages from the manager of their franchise:

1) "Boss, we ran out of Whatsits."

2) "Boss, the price is so low that everyone wants to buy. We don't have enough salespeople to serve all the customers.

3) "Boss, not many people are buying at this price. We have more salespeople in the store than we need."

The first message occurs only if the franchise sells all of its Whatsits. The second message occurs when the demand for Whatsits in the franchise is greater than the sales force can accommodate. Students may find that the best temporary solution is to raise the price they are charging. The next month, they may wish to hire additional salespeople. The third message occurs if sales are so low that they could be handled by a smaller number of salespeople. The temporary solutions are to lower price to stimulate demand or to advertise. If the second or third message occurs three or more times in a month, the manager will make a more detailed suggestion after the monthly report.

Other messages from the manager will be given for emergencies such as not being able to pay bills or Whatsits not arriving. When presenting the simulation to your students, you may wish to give an explanation of each message, but you should <u>not</u> suggest a solution.

RANDOM EVENTS

Two problems can arise when ordering Whatsits: the Whatsit shipment may arrive late, or Whatsit shortages may cause the warehouse to limit order sizes. Late shipments occur at random and without warning. Students who study the Micro Street Journal will receive warning about impending shortages. Whatsit shortages occur at random, but not until after the fourth month of the simulation. If a Whatsit shortage does occur, it will last until the end of the week. Students should not be told <u>when</u> these problems occur, but their possibility could be discussed during the introduction to the simulation.

SALES TAX

A representative of the state treasury department appears after the third and sixth months to collect the state sales tax. The manager will ask how much money to turn over for sales tax. Students will have to compute 4% of the total sales revenue to that point. The amount of sales tax is not subtracted from the students' cash since it is theoretically collected and set aside when Whatsits are sold. However, if students pay more than the amount of sales tax due, the overpayment is subtracted from the cash on hand. Students are fined if they do not pay the full amount of sales tax due. The fine is subtracted from the cash supply. Students should be keeping records of sales income and should not be warned about the treasury official.

EXITING THE PROGRAM

Students may exit the program, without saving data, at any time. On the TRS-80, this is effected by simultaneously holding the SHIFT, down-arrow, and E keys at any input. On the Apple, students may exit by simultaneously holding the Control (CTRL) and E keys at any input.

TEACHER OPTION

The program will hold 30 to 40 files of student simulations-in-progress. Saved data of students no longer using the program may be deleted by the teacher. To do this, simultaneously press the T key along with the CTRL (Apple) or the SHIFT and "down arrow" (TRS-80) keys when the program asks "What is your first name?" Then, follow the directions on the screen. Be sure to regularly check and, if possible, reduce the file. When it is full, students will not be able to save unfinished simulations.

Pre-Simulation Classroom Activities

Before running the simulation, it is important that students become familiar with the mathematical processes and skills they will use, as well as the many factors that can affect a business. Make sure that they are familiar with vocabulary commonly used in the fields of business and economics by duplicating and distributing the Vocabulary List master on page 57. Then discuss the following points, all of which should be considered by an entrepreneur opening a new business:

* Is there a need for the product or service to be offered?
* Will the business be located where the people want the goods or services it provides?
* Do the people running the business have all the information they need for success?
* Does the business have enough "start-up" money to keep operating until it is doing well?

You should also discuss the decisions and problems that can occur after the business is open: setting prices, ordering inventory, late shipments, hiring staff, etc. At this time, students can be introduced to the law of supply and demand and how it affects prices and sales.

Introducing the Activity Sheets

The classroom activities, provided on numbered activity sheets, are used to introduce and enrich the computer simulation. A classroom activity has been provided for each skill and strategy used. Activities 1-5 should be completed prior to the simulation. Activity 6 reinforces and summarizes skills and strategies, and should be used after the students complete the simulation.

Before distributing the activity sheets, explain to your students that businesses often try to develop equations that help them predict the optimum price and revenue levels for selling a given number of goods. Explain that these formulas are called mathematical models.

Masters for the classroom activity sheets begin on page 31 of this guide. Some of the activities require more than one sheet, and are divided into parts "A" and "B." Reduced copies of each activity sheet, with answers, are provided with the explanations on the following pages.

Activity 1- USING MATHEMATICAL MODELS
(reproductions on following pages)

This activity sheet contains two parts. In Part A, students are given formulas that will allow them to compute the number of sales (S) they can expect, based on the price (P) that is charged. These formulas are typical of the formulas students will receive from the economist in the simulation. The formula number, 520, is the potential number of customers the franchise will have in a week. This number is chosen at random in the simulation. Moving from a "good" to a "poor" market, the values of the coefficient of P become larger as market conditions become poorer and sales become smaller. These values are larger for low income communities than for high income communities.

Ask students why they think that S is the number of potential sales. Possible answers are that actual sales will depend on the availability of merchandise and the ability of a business to serve customers. Also, the best a mathematical model can do is approximate a real situation. Point out that if the price charged is too large, these formulas will give a negative answer, but the actual number of sales would be 0.

In problems 5 - 9, the student computes the revenue received on the sales in problems 1 - 4. Students should notice that raising the price does not always increase the revenue received.

Problems 1 - 6 in Part B require students to substitute values into the formulas and then solve the resulting equation for P. You may wish to show students how to solve the original equations for P before substituting values. Once students have solved the formula for P, they can answer problems 1 - 6 by evaluating the new formulas. Depending upon your discretion, students may be allowed to use calculators to do the computations for these exercises.

Problems 7 - 10 are the most difficult and require students to use the answer they obtain from the equations to solve a second problem.

THE WHATSIT CORPORATION

ACTIVITY 1
Part A

USING MATHEMATICAL MODELS

Use these formulas to solve all problems:

FOR A GOOD MARKET USE	S = 520 - (28 x P)
FOR A MODERATE MARKET USE	S = 520 - (30 x P)
FOR A POOR MARKET USE	S = 520 - (32 x P)

S -- POTENTIAL NUMBER OF SALES, P -- PRICE TO BE CHARGED

1) Find the potential sales at a price of $8 for good, moderate, and poor markets. 296 280 264

2) Find the potential sales at a price of $10.25 for good, moderate, and poor markets. 233 212 192

3) Find the potential sales at a price of $12.50 for good, moderate, and poor markets. 170 145 120

4) Find the potential sales at a price of $15.75 for good, moderate, and poor markets. 79 47 16

The amount of money a business receives for a product is called revenue. You can compute the revenue (R) for Whatsits with this formula:

$$R = S \times P$$

5) Find the revenue received for good, moderate, and poor markets for Problem 1. $2368 $2240 $2112

6) Find the revenue received for good, moderate, and poor markets for Problem 2. $2388.25 $2173 $1968

7) Find the revenue received for good, moderate, and poor markets for Problem 3. $2125 $1812.50 $1500

8) Find the revenue received for good, moderate, and poor markets for Problem 4. $1244.25 $740.25 $252

9) Which of the four prices will produce the greatest revenue for each market?
Good market $10.25
Moderate market $8
Poor market $8

SUNBURST COMMUNICATIONS ©1985

THE WHATSIT CORPORATION

ACTIVITY 1
Part B

USING MATHEMATICAL MODELS

Use the formulas and information you gathered in Part A to help you answer these questions.

1) What price should be charged to sell 95 Whatsits in a good market? $15.18

2) What price should be charged to sell 95 Whatsits in a moderate market? $14.17

3) What price should be charged to sell 95 Whatsits in a poor market? $13.28

4) What price should be charged to sell 130 Whatsits in a good market? $13.93

5) What price should be charged in a moderate market to sell 200 Whatsits? $10.67

6) What price should be charged in a poor market to sell 150 Whatsits? $11.56

7) A Whatsit franchise owner needs to generate revenue of at least $1400 per week. The owner plans to charge $15.50 in a good market. Will the owner receive at least $1400? NO

8) If the owner in Problem 7 charged $17 for a Whatsit, how much revenue would he receive? $748

9) A Whatsit franchise owner needs to sell at least 80 Whatsits a week to keep the salespeople busy. If the owner sets the price at $14 in a poor market, will enough Whatsits be sold? NO

10) A Whatsit franchise with a sales force of two can sell 135 Whatsits in a week if market conditions are moderate. If the price for Whatsits is $11, will two salespeople be able to keep up? NO

SUNBURST © 1983 COMMUNICATIONS

ACTIVITY 2- READING AND GRAPHING EQUATIONS (optional)

Part A

If your class has already been exposed to graphing you may wish to complete Activity 2 as a review. It also has two parts. In Part A, students graph three sales equations that are typical of the type that will be found in the simulation. After completing the graphs, students use them to 1) estimate sales if the price is known; or 2) determine the optimum price for selling a given number of Whatsits. Even students who have not done this type of activity before should be able to learn quickly. Example: if the price is known, find it on the price (horizontal) axis, then move vertically up the paper until hitting the graph of the equation. Then read across the value on the horizontal axis to the number of sales. Point out that the graph lines decrease as students read from left to right. Ask students why this is so.

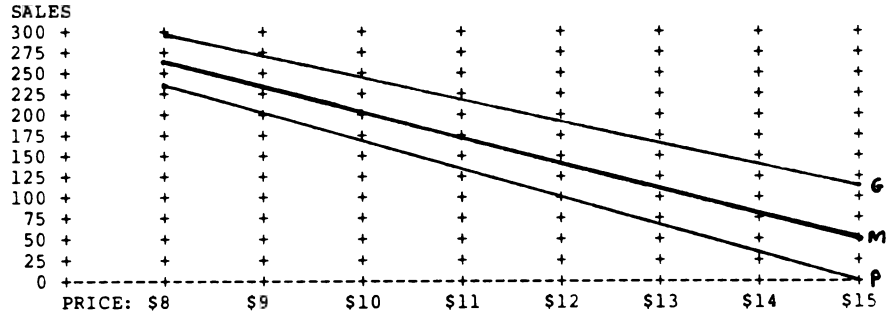
THE WHATSIT CORPORATION — ACTIVITY 2, Part A

READING AND GRAPHING EQUATIONS

The formulas a Whatsit owner uses can only give the approximate number of Whatsits that will be sold. The Whatsit owner could save work by graphing the equations and using the graphs to find approximate prices (P) and sales (S).

Graph the following equations on the graph below. If possible, use a different color for each graph. Then use the graphs to answer the questions below.

FOR A GOOD MARKET S = 500 - (26 x P)
FOR A MODERATE MARKET S = 500 - (30 x P)
FOR A POOR MARKET S = 500 - (34 x P)



1) If the owner charges $11, how many Whatsits will be sold in good, moderate, and poor markets? 215 160 125

2) If the owner charges $9, how many Whatsits will be sold in good, moderate, and poor markets? 260 230 190

3) If the owner charges $13, how many Whatsits will be sold in good, moderate, and poor markets? 165 110 60

4) How much should the owner charge to sell 75 Whatsits in good, moderate, and poor markets? $15+ $14 $12.50

5) How much can the owner charge if he or she wants to sell 150 Whatsits in good, moderate, and poor markets? $13 $11.50 $10.25

6) How much can the owner charge if he or she wants to sell 200 Whatsits in good, moderate, and poor markets? $11.50 $10 $9

Answers are estimates.

SUNBURST COMMUNICATIONS ©1983

ACTIVITY 2 - READING AND GRAPHING EQUATIONS (optional)

Part B

Part B involves graphing second-degree equations. You may wish to assign Part B only to your more advanced students. The revenue equations for Part B are formed by multiplying the sales equations in Part A by P. Students may require a simple explanation of how this is done. Students should notice that the revenue values increase for a time and then decrease. Some answers for problem 2 are: the need to hire more salespeople; higher inventory costs; remaining open more hours.

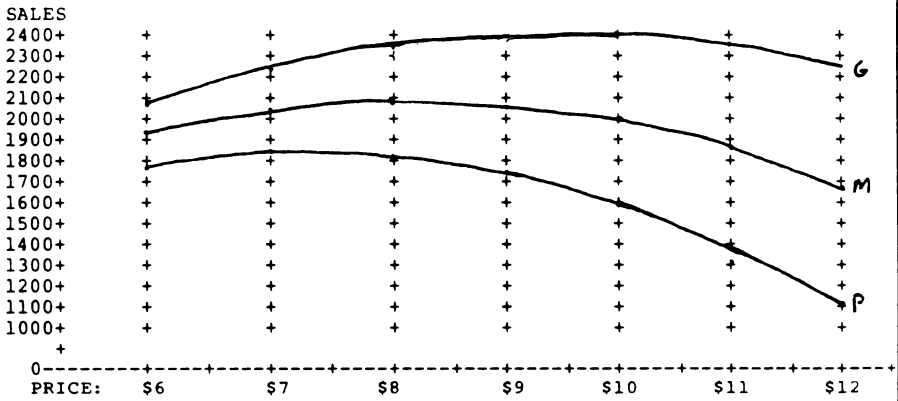
THE WHATSIT CORPORATION — ACTIVITY 2 Part B

READING AND GRAPHING EQUATIONS

The Whatsit owner can use graphs to help decide what price will generate the greatest revenue (R). To find the revenue, the owner multiplies the number of sales by the price. If the owner multiplies the sales formulas from Part A by P, the following formulas will result. Complete the tables below and draw the graphs using different colors if possible.

FOR A GOOD MARKET R = [500 - (26 x P)] x P
FOR A MODERATE MARKET R = [500 - (30 x P)] x P
FOR A POOR MARKET R = [500 - (34 x P)] x P

Good Market Price	Good Market Revenue	Moderate Market Price	Moderate Market Revenue	Poor Market Price	Poor Market Revenue
$6	$2064	$6	$1920	$6	$1776
$7	$2226	$7	$2030	$7	$1834
$8	$2336	$8	$2080	$8	$1824
$9	$2394	$9	$2070	$9	$1746
$10	$2400	$10	$2000	$10	$1600
$11	$2354	$11	$1870	$11	$1386
$12	$2256	$12	$1680	$12	$1104



1) Which price gives the greatest revenue in a good market? $10
A moderate market? $8 A poor market? $7

2) The price that gives the greatest revenue does not always give the greatest profit. Why? (Write your answer on the back).

SUNBURST COMMUNICATIONS ©1983

ACTIVITY 3- ADVERTISING AND SALES

Part A

Activity 3 explores the effect of advertising on Whatsit sales. It involves working with percentages and gives students more practice in working with formulas and equations. The problems in Part A require students to find potential sales increases with advertising. Students use this information to create new formulas and evaluate them. Students will subsequently draw conclusions about the effect of advertising on Whatsit sales.

THE WHATSIT CORPORATION

ACTIVITY 3
Part A

ADVERTISING AND SALES

Use these formulas to solve all problems:

FOR A GOOD MARKET USE $S = 520 - (28 \times P)$
FOR A MODERATE MARKET USE $S = 520 - (30 \times P)$
FOR A POOR MARKET USE $S = 520 - (32 \times P)$

1) A Whatsit franchise owner charges $15 for a Whatsit in a good market. How many Whatsits can be expected to sell? 100

2) In the formula, the number 520 is the potential market for Whatsits. The owner runs an advertising campaign that increases the potential market by 7%. What will the potential market be after the ad campaign? 556 What will the new formula be for a good market? $S = 556 - (28 \times P)$

3) If the owner continues to charge $15, how many Whatsits can be expected to sell during the ad campaign? 136

4) What was the franchise owner's revenue before the ad campaign? $1500 What was the revenue after the ad campaign? $2040

5) The ad campaign cost the owner $300. Did the owner make or lose money by having an ad campaign? OWNER MADE MONEY

6) The owner continues the campaign in a moderate market. What will the new formula be for a moderate market? $S = 556 - (30 \times P)$

7) How many Whatsits can the owner expect to sell at $15 with advertising in a moderate market? 106 What will the revenue be? $1590

8) The same franchise owner stops the first campaign and starts a new campaign that will increase the potential market of 520 by 12%. What will the new potential market be? 584 What will the new formula be for a moderate market? $S = 584 - (30 \times P)$

9) How many Whatsits will the owner sell with the new campaign if $15 is still charged? 134 What will the owner's revenue be? $2010

10) The second campaign cost $200 more than the first. Did the increase in revenue justify the extra cost? YES

SUNBURST ©1983 COMMUNICATIONS

ACTIVITY 3- ADVERTISING AND SALES

Part B

The problems in Part B of Activity 3 are more difficult than those in Part A. They require students to solve the new formulas for P. Students again look at the effects of advertising on the revenue from Whatsit sales and consider its profitability. Students who did not complete Part A should not do these problems. You may decide to allow students to use calculators for these problems.

THE WHATSIT CORPORATION — ACTIVITY 3 Part B

ADVERTISING AND SALES

Refer to your work in Part A when you answer these questions. For long answers, use the back of this sheet.

1) A Whatsit franchise owner tries an advertising campaign that should increase the potential market of 520 by 15%. What will be the potential sales with the campaign? 598 What will be the formula for a moderate market? S=598-(30×P)

2) The owner's staff can sell 115 Whatsits in a week. If market conditions are good, what price should the owner charge to sell 115 Whatsits? $14.46 What revenue will the owner receive? $1662.90

3) The owner runs an ad campaign that increases the potential market by 7%. Use the formula you found in Problem 2 of Part A to find the price the owner can charge and still sell 115 units while advertising. $15.75

4) What will be the revenue the owner receives for the sales in Problem 3? _____ The price for the ad campaign was $200. Was the ad campaign a good deal for the owner? Why or why not? (HINT: Compare with the revenue for Problem 2.) THE AD CAMPAIGN WAS NOT A GOOD DEAL. IT COST MORE THAN THE ADDITIONAL REVENUE.

5) The Whatsit owner's staff can sell 95 Whatsits in a week if market conditions are moderate. If the Whatsit owner does not advertise, what price should be charged to sell 95 Whatsits? $14.17

6) Use the formula you found in Problem 6 of Part A to find how much the Whatsit owner can charge to sell 95 Whatsits while advertising. $15.35

7) How much revenue does the owner receive in Problem 5, in Problem 6? If the advertising cost $300, was it worth the expense? Why or why not? PROB. 5 - $1346.15 ; PROB. 6 - $1460.15. THE ADVERTISING WAS NOT WORTH THE MONEY. IT'S COST EXCEEDS THE ADDED REVENUE

SUNBURST COMMUNICATIONS

ACTIVITY 4- INTEREST PAYMENTS AND SALES TAX

Problems 1 - 7 require students to compute the simple interest on a loan. Problems 8 - 10 require students to compute the amount of sales tax due. The latter problems require students to compute the total amount of sales before they can compute the amount of tax. Students should round all answers off to the nearest cent.

THE WHATSIT CORPORATION ACTIVITY 4

INTEREST PAYMENTS AND SALES TAX

The local bank and trust uses this formula to figure monthly interest payments (I):

$$I = R \times L / 12$$

R -- RATE OF INTEREST CHARGED, L -- THE AMOUNT OF THE LOAN

Complete the problems below, expressing interest rate percentages as parts of 100 in decimal form (for example, 17% would equal .17).

1) Why does the bank divide by 12 in the formula? TO FIND ONE MONTH'S VALUE OF ANNUAL RATE

2) Compute the monthly interest on a loan of $5,000 at 14%. $58.33

3) What will be the total interest on this loan for 1 year? $700

4) Compute the monthly interest on a loan of $5,000 at 17% $70.83

5) What will be the total interest on this loan for 1 year? $850

6) Compute the monthly interest on a loan of $9,000 at 12%. $90

7) What will be the total interest on this loan for 1 year? $1080

The Whatsit franchise is located in a state that has a 4% sales tax. Every three months, the Whatsit owner must send the state 4% of the total sales income. The formula is:

$$T = R \times N$$

T = STATE SALES TAX

R = RATE OF SALES TAX, N = TOTAL INCOME FROM SALES

8) A Whatsit franchise has the following monthly sales revenue: $4538, $7580, $6050. What is the amount of sales tax due the state if the tax rate is 4%? $726.72

9) Over a three-month period, a Whatsit franchise has the following weekly sales: $900, $950, $940, $960, $1025, $1100, $1175, $1210, $800, $820, $870 and $850. Find the amount of sales tax due the state if the tax rate is 4%. $464

10) Weekly sales figures for three months are: $1800, $1950, $2010, $1875, $1250, $1210, $1190, $1200, $1700, $1810, $1775, $1840. If the rate is 4%, what amount of sales tax is due? $784

SUNBURST ©1983 COMMUNICATIONS

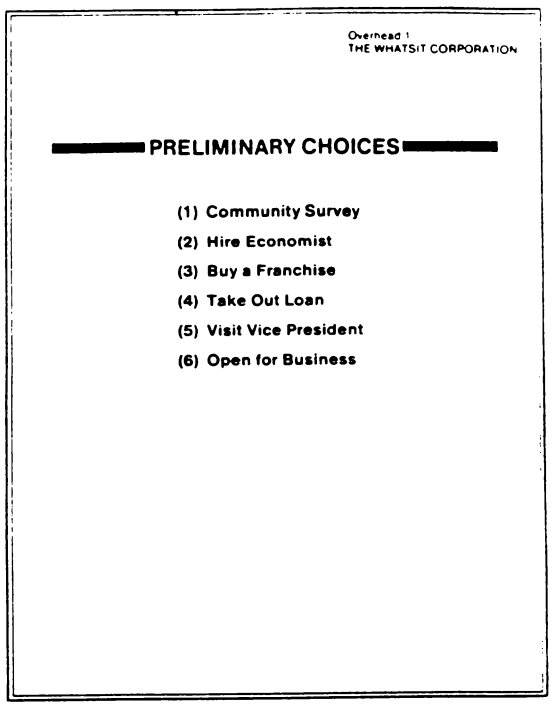
Use of the Overhead Transparencies

Overhead transparency masters, representing key frames of the simulation, begin on page 41. They should be used to explain the simulation after the introduction and completion of Activities 1-4. After the overheads and simulation worksheets have been introduced and discussed, use them in conjunction with Activity 5. Following the successful completion of Activity 5, students should be ready to run the simulation.

* * * * *

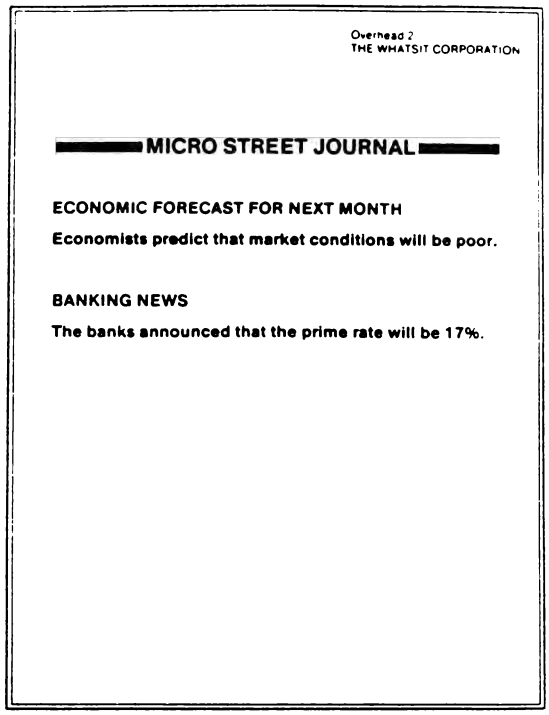
OVERHEAD TRANSPARENCY 1 shows the first decision menu students will have. Discuss the following points:

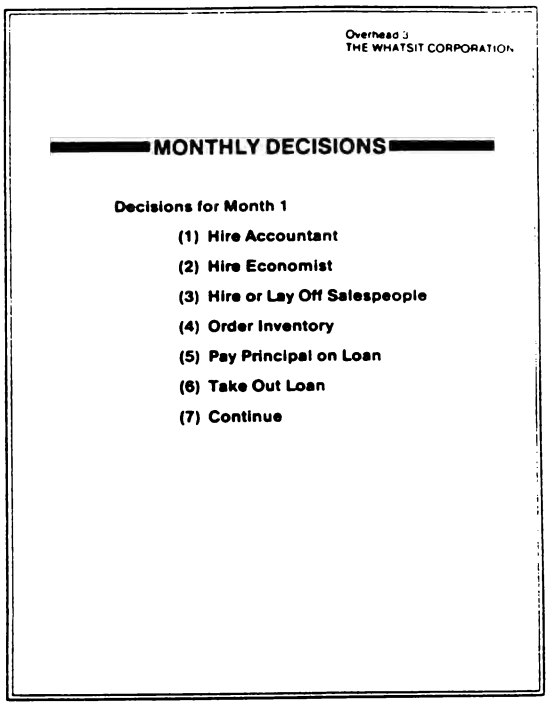
* What could a community survey do for a franchise owner?
* What is an economist?
* What could an economist do for a franchise owner?
* Why would you want to take out a loan?
* What should you do before you open for business?



OVERHEAD TRANSPARENCY 2 shows the MICRO STREET JOURNAL. Discuss the following points:

* What information is in the MICRO STREET JOURNAL that would help a franchise owner?


Overhead 2
THE WHATSIT CORPORATION
MICRO STREET JOURNAL
ECONOMIC FORECAST FOR NEXT MONTH
Economists predict that market conditions will be poor.
BANKING NEWS
The banks announced that the prime rate will be 17%.

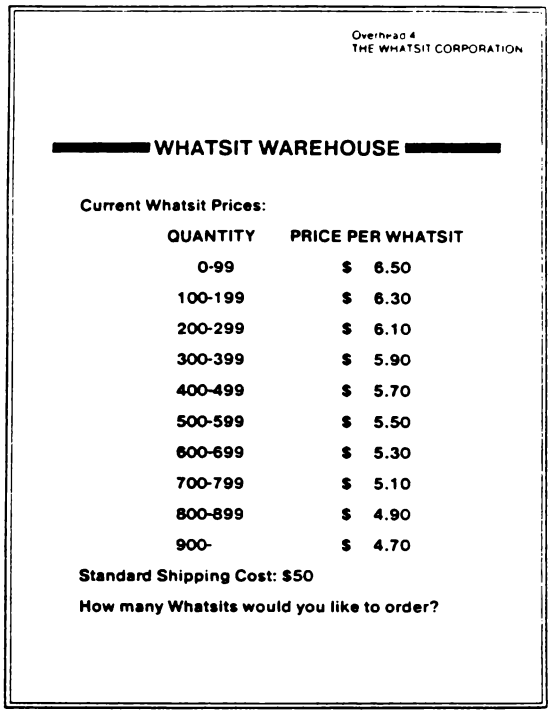


OVERHEAD TRANSPARENCY 3 shows the menu for decisions that the students must make each month. Point out that the monthly inventory order is the scheduled time to order inventory. Students can order inventory during the month but it will cost more. Discuss these points:

* When would you want to change the number of salespeople you employ?
* What are the advantages and disadvantages of paying principal on the loan?

OVERHEAD TRANSPARENCY 4 shows the procedure for ordering Whatsits. Remind students to record the number of Whatsits purchased on the INVENTORY RECORD sheet. Discuss these points:

* What is the advantage of ordering large quantities of Whatsits?
* What are the disadvantages?


Overhead 4
THE WHATSIT CORPORATION

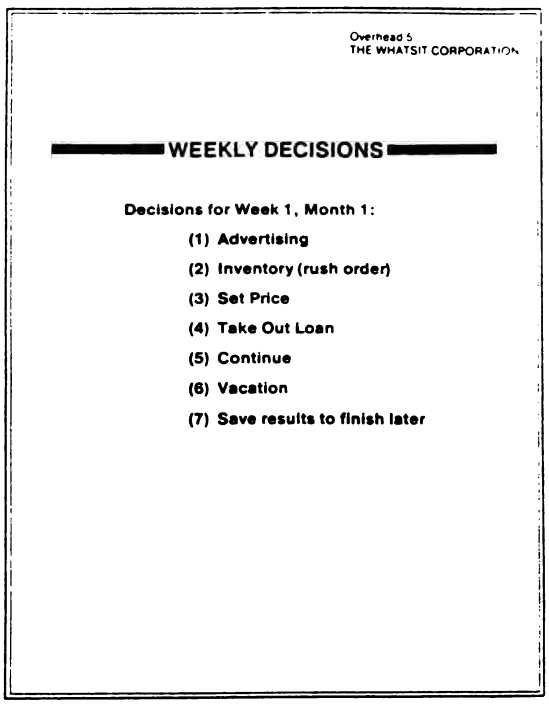
WHATSIT WAREHOUSE

Current Whatsit Prices:

QUANTITY	PRICE PER WHATSIT
0-99	$ 6.50
100-199	$ 6.30
200-299	$ 6.10
300-399	$ 5.90
400-499	$ 5.70
500-599	$ 5.50
600-699	$ 5.30
700-799	$ 5.10
800-899	$ 4.90
900-	$ 4.70

Standard Shipping Cost: $50

How many Whatsits would you like to order?


Overhead 5
THE WHATSIT CORPORATION

WEEKLY DECISIONS

Decisions for Week 1, Month 1:

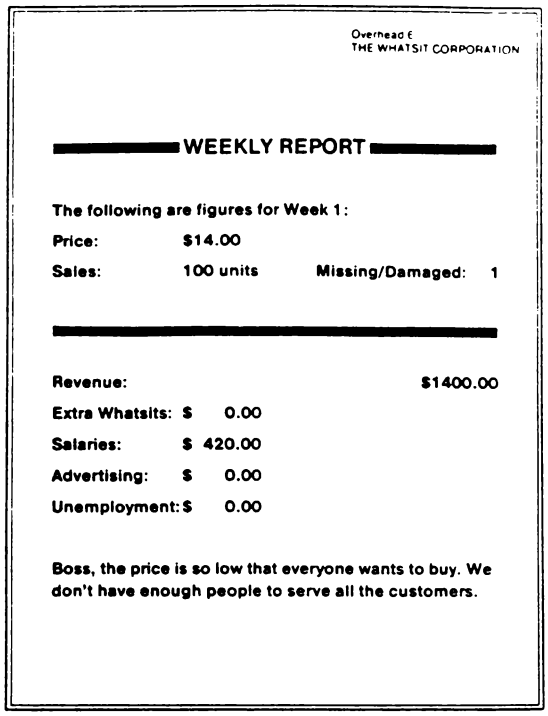
(1) Advertising
(2) Inventory (rush order)
(3) Set Price
(4) Take Out Loan
(5) Continue
(6) Vacation
(7) Save results to finish later

OVERHEAD TRANSPARENCY 5 shows the menu of decisions students must make each week. Explain the difference between the Continue and Vacation options. Explain when to save results. Discuss these points:

* When would you want to advertise your product?
* What is the disadvantage of rush-ordering inventory?
* When would you want to change the price you are charging?

OVERHEAD TRANSPARENCY 6 shows the report that students will receive at the end of each week. Point out that this report provides information they will need for the INVENTORY RECORD, SALES RECORD, and CASH ACCOUNT worksheets (described on the next page). you may wish to introduce the worksheets at this point, using the masters as overhead transparencies. When displaying Overhead Transparency 6, discuss over the following points:

* How many Whatsits were sold this week?
* How many Whatsits were damaged or missing?
* What was the week's revenue?
* What were the week's costs?



Overhead 6
THE WHATSIT CORPORATION

WEEKLY REPORT

The following are figures for Week 1:

Price: $14.00

Sales: 100 units **Missing/Damaged:** 1

Revenue: $1400.00

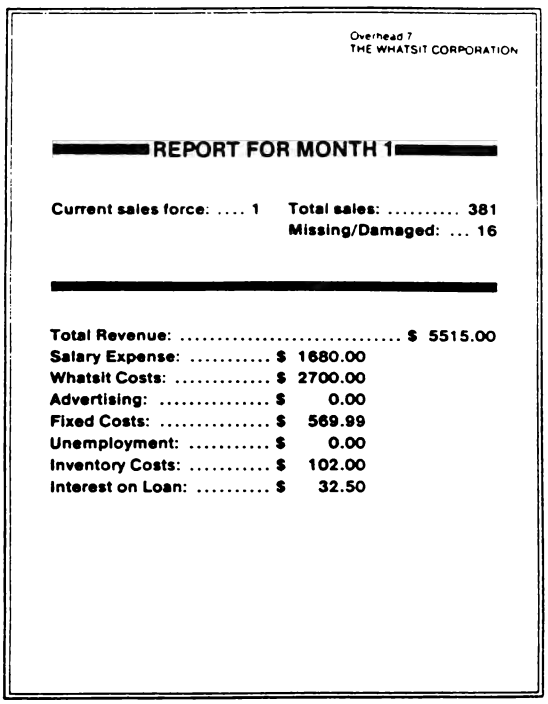
Extra Whatsits: $ 0.00

Salaries: $ 420.00

Advertising: $ 0.00

Unemployment: $ 0.00

Boss, the price is so low that everyone wants to buy. We don't have enough people to serve all the customers.



Overhead 7
THE WHATSIT CORPORATION

REPORT FOR MONTH 1

Current sales force: .... 1 **Total sales:** 381
Missing/Damaged: ... 16

Total Revenue: ..... $ 5515.00
Salary Expense: ..... $ 1680.00
Whatsit Costs: ..... $ 2700.00
Advertising: ..... $ 0.00
Fixed Costs: ..... $ 569.99
Unemployment: ..... $ 0.00
Inventory Costs: ..... $ 102.00
Interest on Loan: ..... $ 32.50

OVERHEAD TRANSPARENCY 7 shows the report students will receive at the end of each month. Point out that the information they will need for the INCOME STATEMENT is in this report.

* What were the biggest costs for the franchise?
* Did the franchise make or lose money?

Introducing the Simulation Worksheets

THE WHATSIT CORPORATION includes seven simulation worksheets that serve as forms on which to keep records during the simulation: GENERAL INFORMATION (Worksheet 1), START-UP COSTS (Worksheet 2), CASH ACCOUNTS (Worksheet 3), INVENTORY RECORD (Worksheet 4), SALES RECORD (Worksheet 5), INCOME STATEMENT (Worksheet 6),and BALANCE SHEET (Worksheet 7). The simulation worksheet masters begin on page 49. They should not be confused with the pre-simulation activity sheets.

Each student in a group should be responsible for at least one of these forms. If there are not enough students in the group, some will be responsible for two forms.

The GENERAL INFORMATION worksheet provides a handy reference record of formulas and figures necessary for success at the simulation.

Students complete the START-UP COSTS worksheet while making their initial decisions. The remaining capital is used as the Cash on Hand under Starting Conditions in Month 1 for the CASH ACCOUNT worksheet.

The CASH ACCOUNTS worksheet is the most complicated of the record forms. It should be the responsibility of the most capable student in the group. The CASH ACCOUNTS worksheet allows students to keep track of all revenue and expenditures. The Starting Conditions column is used to record information from the monthly report and decisions made from the Monthly Decision menu. The Week columns are for recording information given in the weekly reports.

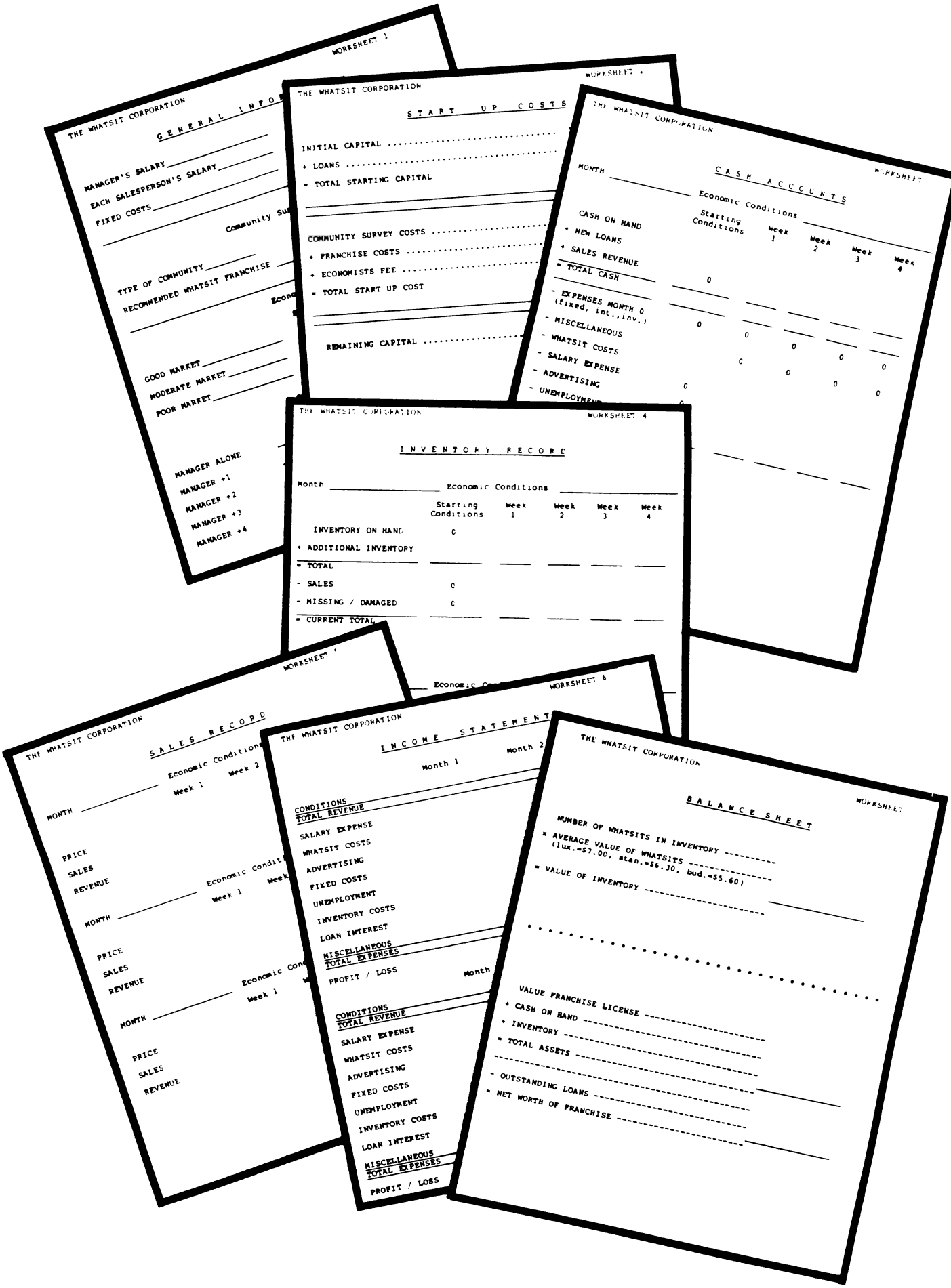
The INVENTORY RECORD is used to keep track of the number of Whatsits available. The student in charge of this form is responsible for informing the group if the Whatsit supply gets low. The INVENTORY RECORD is updated each week. If students decide to take the Vacation option, some weeks will not have entries.

The SALES RECORD helps students keep track of the weekly sales, price, and revenue. This sheet should provide valuable information when students are trying to determine Whatsit prices or price changes.

The INCOME STATEMENT is updated from the Monthly Report. It allows students to determine how well they did each month of the simulation.

The BALANCE SHEET allows students to determine how well they have done over the course of the six-month period. They can also use it to compare their performances with that of other groups of students.

THE WHATSIT CORPORATION
Simulation Worksheets



THE WHATSIT CORPORATION

WORKSHEET 1

GENERAL INFO

MANAGER'S SALARY

EACH SALESPERSON'S SALARY

FIXED COSTS

Community Su

TYPE OF COMMUNITY

RECOMMENDED WHATSIT FRANCHISE

Econ

GOOD MARKET

MODERATE MARKET

POOR MARKET

MANAGER ALONE

MANAGER +1

MANAGER +2

MANAGER +3

MANAGER +4

THE WHATSIT CORPORATION

START UP COSTS

INITIAL CAPITAL .....

+ LOANS .....

= TOTAL STARTING CAPITAL

COMMUNITY SURVEY COSTS .....

+ FRANCHISE COSTS .....

+ ECONOMISTS FEE .....

= TOTAL START UP COST

REMAINING CAPITAL .....

THE WHATSIT CORPORATION

WORKSHEET

MONTH

CASH ACCOUNTS

Economic Conditions

	Starting Conditions	Week 1	Week 2	Week 3	Week 4
CASH ON HAND					
+ NEW LOANS					
+ SALES REVENUE					
= TOTAL CASH	0				
- EXPENSES MONTH 0 (fixed, int., inv.)					
- MISCELLANEOUS	0	0			
- WHATSIT COSTS			0		
- SALARY EXPENSE		0		0	
- ADVERTISING	0		0		0
- UNEMPLOYMENT				0	

THE WHATSIT CORPORATION

WORKSHEET 4

INVENTORY RECORD

Month _____ Economic Conditions _____

	Starting Conditions	Week 1	Week 2	Week 3	Week 4
INVENTORY ON HAND	0				
+ ADDITIONAL INVENTORY					
= TOTAL					
- SALES	0				
- MISSING / DAMAGED	0				
= CURRENT TOTAL					

THE WHATSIT CORPORATION

WORKSHEET

SALES RECORD

MONTH _____ Economic Conditions

Week 1 Week 2

PRICE

SALES

REVENUE

MONTH _____ Economic Conditi

Week 1 Week

PRICE

SALES

REVENUE

MONTH _____ Economic Cond

Week 1

PRICE

SALES

REVENUE

THE WHATSIT CORPORATION

WORKSHEET 6

INCOME STATEMENT

Month 1 Month 2

CONDITIONS

TOTAL REVENUE

SALARY EXPENSE

WHATSIT COSTS

ADVERTISING

FIXED COSTS

UNEMPLOYMENT

INVENTORY COSTS

LOAN INTEREST

MISCELLANEOUS

TOTAL EXPENSES

PROFIT / LOSS

Month

CONDITIONS

TOTAL REVENUE

SALARY EXPENSE

WHATSIT COSTS

ADVERTISING

FIXED COSTS

UNEMPLOYMENT

INVENTORY COSTS

LOAN INTEREST

MISCELLANEOUS

TOTAL EXPENSES

PROFIT / LOSS

THE WHATSIT CORPORATION

WORKSHEET

BALANCE SHEET

NUMBER OF WHATSITS IN INVENTORY _____

x AVERAGE VALUE OF WHATSITS _____
(lux.=$7.00, stan.=$6.30, bud.=$5.60)

= VALUE OF INVENTORY _____

VALUE FRANCHISE LICENSE _____

+ CASH ON HAND _____

+ INVENTORY _____

= TOTAL ASSETS _____

- OUTSTANDING LOANS _____

= NET WORTH OF FRANCHISE _____

ACTIVITY 5- PREPARING FOR START-UP

Activity 5 should be completed the day before starting the simulation, after the overhead transparencies and simulation worksheets have been introduced and discussed. Before starting, these worksheets should be distributed to the class:

START-UP COSTS (Worksheet 2): One copy for each group
CASH ACCOUNTS (Worksheet 3): Two copies for each group
INVENTORY RECORD (Worksheet 4): One copy for each group

* * * * *

Begin by making sure students are familiar with the preliminary, monthly, and weekly decisions that they must make during the simulation. Then give students a START-UP COSTS form (Worksheet 2), along with the following information:

* A $5,000 loan is taken;
* A community survey is conducted at a cost of $1,500;
* A franchise license is purchased for $10,000;
* A economist is hired for $2,000.

Have students complete the form and determine the remaining capital. Then have them transfer the figure for the remaining capital, $1,500, to the CASH ACCOUNTS form (Worksheet 3) It should be recorded as Cash On Hand under Starting Conditions. Then give students the following information for Starting Conditions:

* New loans $3,000;
* A purchase of 400 Whatsits at a cost of $2,610.

Have students complete the Starting Conditions of the CASH ACCOUNTS and the INVENTORY RECORD forms. Use an overhead projector to show how the completed forms should appear. Have students transfer the remaining cash on hand to the Week 1 column. On the INVENTORY RECORD worksheet, have students transfer the current total (400) to the Inventory On Hand position under Week 1. Explain that this transfer is made at the end of each period.

Give students this information for Week 1:

* Sales - 50 units;
* Missing/damaged - 4 units;
* Sales revenue - $700;
* Whatsit costs - $0;
* Salary - $240;
* Advertising - $200.

Have students record the information under Week 1. Show students how the completed forms should look and have them transfer the cash on hand and current total to Week 2.

Give students this information for Week 2:

* Sales - 39 units;
* Missing/damaged - 5 units;
* Sales revenue - $702;
* Whatsit costs - $0;
* Salary - $240;
* Advertising - $200.

Have students record information and show how completed forms should look.

Give students this information for Week 3:

* Sales - 50 units;
* Missing/damaged - 6 units;
* Sales revenue - $825;
* Whatsit costs - $0;
* Salary - $240;
* Advertising - $200.

Have students record information and show how completed forms should look.

Give students this information for Week 4:

* Sales - 50 units;
* Missing/damaged - 2 units;
* Sales revenue - $837.50;
* Whatsit costs - $0;
* Salary - $240;
* Advertising - $200.

Have students record the information and show them how forms should look at this time. Have students transfer cash on hand and current inventory to the Starting Conditions for Month 2.

Give students the following information as Starting Conditions for Month 2:

* New loans - $1000;
* Fixed costs - $714;
* Interest - $100;
* Inventory - $110;
* 300 Whatsits are purchased at a cost of $2,090.

Explain that the information for fixed costs, interest, and inventory will be found in the monthly report. Have students complete the starting conditions and transfer the totals to the Week 1 column. Show students how the forms should look at this time.

Give this information for Month 2, Week 1:

* Sales - 115 units;
* Missing/damaged - 3 units;
* Sales revenue - $1,725;
* Whatsit costs - $0;
* Salary - $420;
* Advertising - $200.

Have students record the information and show them how forms should look at this time. Give this information for Week 2:

* Sales - 115 units;
* Missing/damaged - 4 units;
* Sales revenue - $1,782;
* Whatsit costs - $0;
* Salary - $420;
* Advertising - $200.

Have students record the information and show them how forms should look at this time.

Give this information for Week 3:

* Sales - 115 units;
* Missing/damaged - 1 unit;
* Sales revenue - $1,840;
* Whatsit costs - $0;
* Salary - $420;
* Advertising - $200.

Have students record the information and show them how forms should look at this time,. Give this information for Week 4:

* Sales - 115 units;
* Missing/damaged - 6 units;
* Sales revenue - $1,897.50;
* Whatsit costs - $0;
* Salary - $420;
* Advertising - $200.

Have students record the information and show them how forms should look at this time.

THE WHATSIT CORPORATION: SURVIVAL MATH SKILLS

The Simulation

THE WHATSIT CORPORATION simulation is the central element of the program. It should be run after all preliminary activities are completed.

Introducing the Simulation

When introducing the simulation, make sure that students understand the ways in which all of its variables interact, as well as the initial, weekly, and monthly decisions available to them throughout a run. The overhead transparencies, explained on page 19, are very helpful for this purpose.

Students should be divided into groups of four or five for running the simulation. Each student in a group should be responsible for completing one or more of the simulation worksheets (for record keeping). You may allow student groups to elect their own officers (President, Treasurer, etc.) and to assign worksheet responsibilities accordingly. Students should be encouraged to use their records to evaluate the success of their decisions and to plan new strategies.

On the day of the simulation, distribute copies of the worksheets (page 49) in the following manner:

GENERAL INFORMATION (Worksheet 1): One copy for each group
START-UP COSTS (worksheet 2): One copy for each group
CASH ACCOUNTS (Worksheet 3): Six copies for each group
INVENTORY RECORD (Worksheet 4): Three copies for each group
SALES RECORD (Worksheet 5): Two copies for each group
INCOME STATEMENT (Worksheet 6): One copy for each group
BALANCE SHEET (Worksheet 7): One copy for each group

It is recommended that students be allowed to use calculators for the simulation's computations. They should be reminded to save their simulation results five to ten minutes before the end of each class. Individuals or groups will then be able to continue the simulation on another day.

Running the Simulation

As students begin the simulation, encourage a cooperative, problem-solving environment. To do this, you will need to plan more time for class discussion at points throughout a single run, or

between runs. Encourage students to develop alternate solutions to problems. Explain that many of the situations encountered have more than one "correct" answer or more than one way to find a solution. If time permits, allow students to run the simulation more than once in order to find better solutions. When discussing the problems and methods associated with finding a solution, encourage the students to follow these steps:

-Study the problem carefully. Be sure they know what they are trying to accomplish.

-Organize known information and data.

-Decide what other information they may need to know.

-Brainstorm several possible methods for finding a solution.

-Evaluate all alternatives and select the best.

-Use their selected method or procedure.

-Evaluate their final solution.

Use the simulation as often as your class schedule permits. Repeated use will lead to a constant improvement in thinking, math, and planning skills, problem solving, and an understanding of the forces that shape the real business world.

Post-Simulation Follow-Up

Activity 6

After completion of the simulation, have students complete Activity 6, EVALUATING THE RESULTS. Then conduct a classroom review of the simulation, based on students' answers to the questions. Discuss actions, results, and strategies, paying special attention to data recorded on the simulation worksheets. What mistakes or misjudgements were made? How could the group's "talent" be organized more efficiently? How did the simulation's variables interact? What could be done differently next time?

Following the review, give students the opportunity to run the simulation again with the objective of improving their original performances.

THE WHATSIT CORPORATION ACTIVITY 6

EVALUATING THE RESULTS

Answer these questions after you have completed the simulation.

1) Did you conduct a community survey before you purchased your franchise? If you conducted a survey, did it influence your choice?

2) Did you hire the economist? If you did, when? Did you use the information the economist gave you?

ANSWERS WILL VARY.

3) How did you decide how many Whatsits to order and how much to charge for them?

4) Did you advertise? Why? What were the results?

5) Did any Whatsit shipments arrive late? What did you do about it? Did the late shipment change the way you placed the rest of your orders?

6) Did you have a Whatsit shortage? Did you know that it was coming? Did you do anything to prepare for it?

7) If you ran the simulation again, what would you do differently? What would you do the same?

SUNBURST COMMUNICATIONS ©1983

MASTERS FOR CLASSROOM ACTIVITY SHEETS

THE WHATSIT CORPORATION

ACTIVITY 1
Part A

USING MATHEMATICAL MODELS

Use these formulas to solve all problems:

FOR A GOOD MARKET USE	S = 520 - (28 x P)
FOR A MODERATE MARKET USE	S = 520 - (30 x P)
FOR A POOR MARKET USE	S = 520 - (32 x P)

S -- POTENTIAL NUMBER OF SALES, P -- PRICE TO BE CHARGED

1) Find the potential sales at a price of $8 for good, moderate, and poor markets. _____ _____ _____

2) Find the potential sales at a price of $10.25 for good, moderate, and poor markets. _____ _____ _____

3) Find the potential sales at a price of $12.50 for good, moderate, and poor markets. _____ _____ _____

4) Find the potential sales at a price of $15.75 for good, moderate, and poor markets. _____ _____ _____

The amount of money a business receives for a product is called revenue. You can compute the revenue (R) for Whatsits with this formula:

$$R = S \times P$$

5) Find the revenue received for good, moderate, and poor markets for Problem 1. _____ _____ _____

6) Find the revenue received for good, moderate, and poor markets for Problem 2. _____ _____ _____

7) Find the revenue received for good, moderate, and poor markets for Problem 3. _____ _____ _____

8) Find the revenue received for good, moderate, and poor markets for Problem 4. _____ _____ _____

9) Which of the four prices will produce the greatest revenue for each market?
Good market _____
Moderate market _____
Poor market _____

SUNBURST COMMUNICATIONS ©1983

THE WHATSIT CORPORATION

ACTIVITY 1
Part B

USING MATHEMATICAL MODELS

Use the formulas and information you gathered in Part A to help you answer these questions.

1) What price should be charged to sell 95 Whatsits in a good market? _____

2) What price should be charged to sell 95 Whatsits in a moderate market? _____

3) What price should be charged to sell 95 Whatsits in a poor market? _____

4) What price should be charged to sell 130 Whatsits in a good market? _____

5) What price should be charged in a moderate market to sell 200 Whatsits? _____

6) What price should be charged in a poor market to sell 150 Whatsits? _____

7) A Whatsit franchise owner needs to generate revenue of at least $1400 per week. The owner plans to charge $15.50 in a good market. Will the owner receive at least $1400? _____

8) If the owner in Problem 7 charged $17 for a Whatsit, how much revenue would he receive? _____

9) A Whatsit franchise owner needs to sell at least 80 Whatsits a week to keep the salespeople busy. If the owner sets the price at $14 in a poor market, will enough Whatsits be sold? _____

10) A Whatsit franchise with a sales force of two can sell 135 Whatsits in a week if market conditions are moderate. If the price for Whatsits is $11, will two salespeople be able to keep up? _____

SUNBURST COMMUNICATIONS ©1983

THE WHATSIT CORPORATION

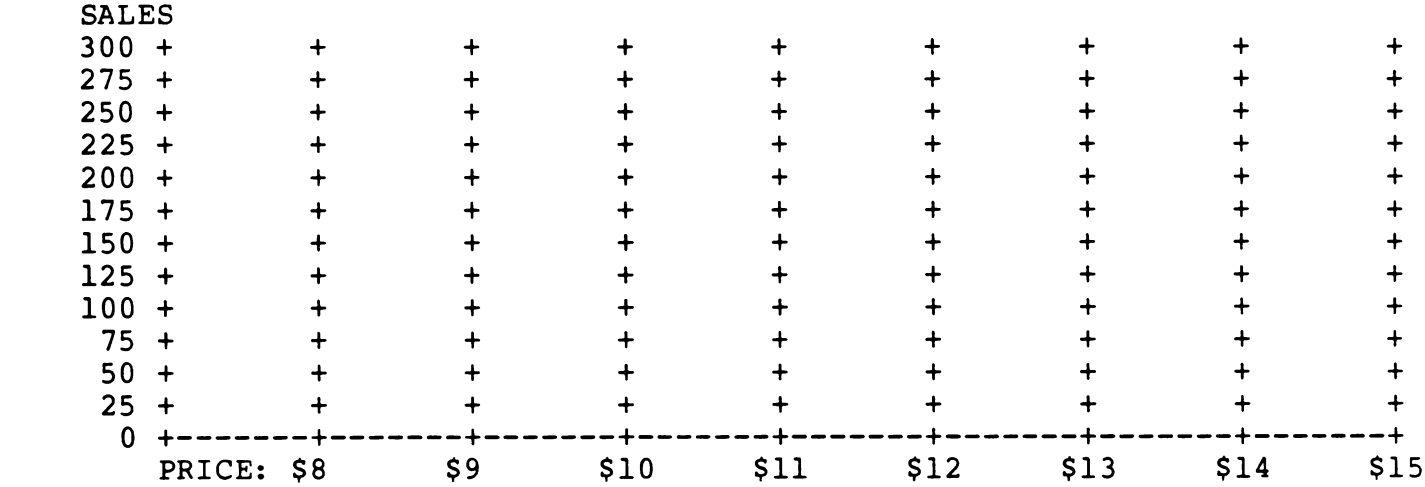
ACTIVITY 2
Part A

READING AND GRAPHING EQUATIONS

The formulas a Whatsit owner uses can only give the approximate number of Whatsits that will be sold. The Whatsit owner could save work by graphing the equations and using the graphs to find approximate prices (P) and sales (S).

Graph the following equations on the graph below. If possible, use a different color for each graph. Then use the graphs to answer the questions below.

FOR A GOOD MARKET $S = 500 - (26 \times P)$
FOR A MODERATE MARKET $S = 500 - (30 \times P)$
FOR A POOR MARKET $S = 500 - (34 \times P)$



1) If the owner charges $11, how many Whatsits will be sold in good, moderate, and poor markets? _____ _____ _____

2) If the owner charges $9, how many Whatsits will be sold in good, moderate, and poor markets? _____ _____ _____

3) If the owner charges $13, how many Whatsits will be sold in good, moderate, and poor markets? _____ _____ _____

4) How much should the owner charge to sell 75 Whatsits in good, moderate, and poor markets? _____ _____ _____

5) How much can the owner charge if he or she wants to sell 150 Whatsits in good, moderate, and poor markets? _____ _____ _____

6) How much can the owner charge if he or she wants to sell 200 Whatsits in good, moderate, and poor markets? _____ _____ _____

SUNBURST COMMUNICATIONS ©1983

THE WHATSIT CORPORATION

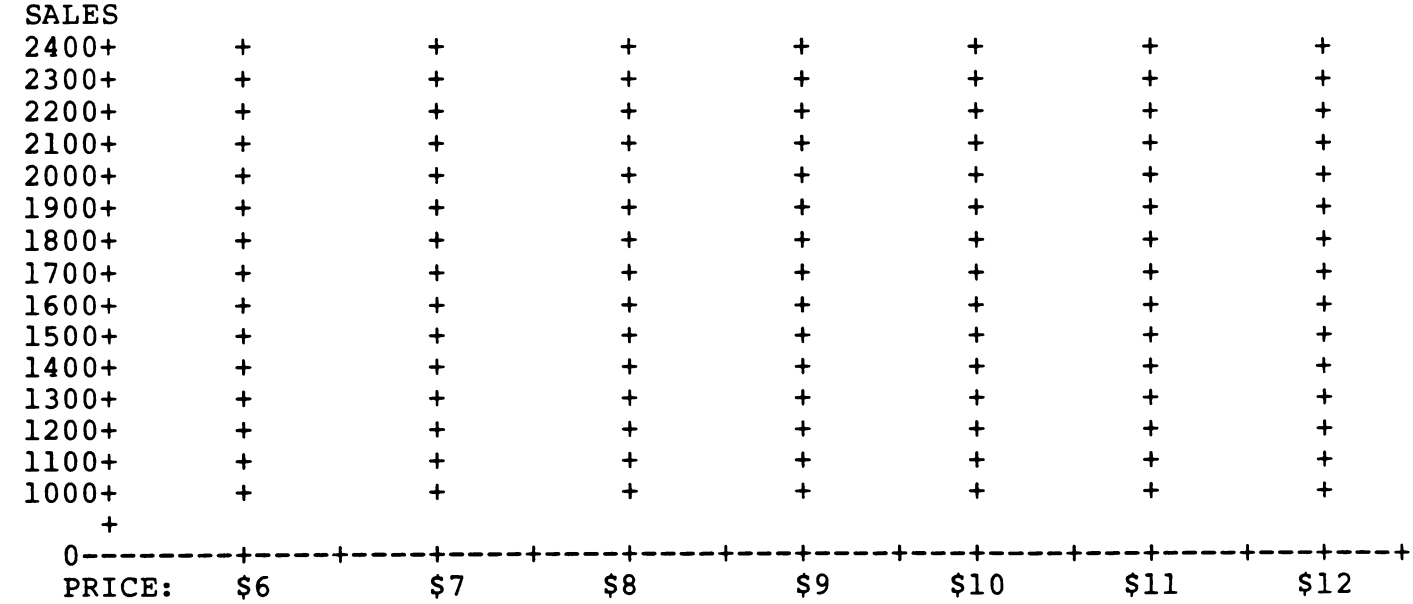
ACTIVITY 2
Part B

READING AND GRAPHING EQUATIONS

The Whatsit owner can use graphs to help decide what price will generate the greatest revenue (R). To find the revenue, the owner multiplies the number of sales by the price. If the owner multiplies the sales formulas from Part A by P, the following formulas will result. Complete the tables below and draw the graphs using different colors if possible.

FOR A GOOD MARKET $R = [500 - (26 \times P)] \times P$
FOR A MODERATE MARKET $R = [500 - (30 \times P)] \times P$
FOR A POOR MARKET $R = [500 - (34 \times P)] \times P$

Good Market		Moderate Market		Poor Market	
Price	Revenue	Price	Revenue	Price	Revenue
$6		$6		$6	
$7		$7		$7	
$8		$8		$8	
$9		$9		$9	
$10		$10		$10	
$11		$11		$11	
$12		$12		$12	



1) Which price gives the greatest revenue in a good market? _____
A moderate market? _____ A poor market? _____

2) The price that gives the greatest revenue does not always give the greatest profit. Why? (Write your answer on the back).

SUNBURST COMMUNICATIONS ©1983

THE WHATSIT CORPORATION

ACTIVITY 3
Part A

ADVERTISING AND SALES

Use these formulas to solve all problems:

FOR A GOOD MARKET USE	S = 520 - (28 x P)
FOR A MODERATE MARKET USE	S = 520 - (30 x P)
FOR A POOR MARKET USE	S = 520 - (32 x P)

1) A Whatsit franchise owner charges $15 for a Whatsit in a good market. How many Whatsits can be expected to sell? _____

2) In the formula, the number 520 is the potential market for Whatsits. The owner runs an advertising campaign that increases the potential market by 7%. What will the potential market be after the ad campaign? _____ What will the new formula be for a good market? _____

3) If the owner continues to charge $15, how many Whatsits can be expected to sell during the ad campaign? _____

4) What was the franchise owner's revenue before the ad campaign? _____ What was the revenue after the ad campaign? _____

5) The ad campaign cost the owner $300. Did the owner make or lose money by having an ad campaign? _____

6) The owner continues the campaign in a moderate market. What will the new formula be for a moderate market? _____

7) How many Whatsits can the owner expect to sell at $15 with advertising in a moderate market? _____ What will the revenue be? _____

8) The same franchise owner stops the first campaign and starts a new campaign that will increase the potential market of 520 by 12%. What will the new potential market be? _____ What will the new formula be for a moderate market? _____

9) How many Whatsits will the owner sell with the new campaign if $15 is still charged? _____ What will the owner's revenue be? _____

10) The second campaign cost $200 more than the first. Did the increase in revenue justify the extra cost? _____

SUNBURST COMMUNICATIONS ©1983

THE WHATSIT CORPORATION

ACTIVITY 3
Part B

ADVERTISING AND SALES

Refer to your work in Part A when you answer these questions. For long answers, use the back of this sheet.

1) A Whatsit franchise owner tries an advertising campaign that should increase the potential market of 520 by 15%. What will be the potential sales with the campaign? _____ What will be the formula for a moderate market? _____

2) The owner's staff can sell 115 Whatsits in a week. If market conditions are good, what price should the owner charge to sell 115 Whatsits? _____ What revenue will the owner receive? _____

3) The owner runs an ad campaign that increases the potential market by 7%. Use the formula you found in Problem 2 of Part A to find the price the owner can charge and still sell 115 units while advertising._____

4) What will be the revenue the owner receives for the sales in Problem 3? _____ The price for the ad campaign was $200. Was the ad campaign a good deal for the owner? Why or why not? (HINT: Compare with the revenue for Problem 2.) _____
_____
_____

5) The Whatsit owner's staff can sell 95 Whatsits in a week if market conditions are moderate. If the Whatsit owner does not advertise, what price should be charged to sell 95 Whatsits? _____

6) Use the formula you found in Problem 6 of Part A to find how much the Whatsit owner can charge to sell 95 Whatsits while advertising.
_____

7) How much revenue does the owner receive in Problem 5, in Problem 6? If the advertising cost $300, was it worth the expense? Why or why not?_____
_____

SUNBURST COMMUNICATIONS ©1983

THE WHATSIT CORPORATION ACTIVITY 4

INTEREST PAYMENTS AND SALES TAX

The local bank and trust uses this formula to figure monthly interest payments (I):

$$I = R \times L / 12$$

R -- RATE OF INTEREST CHARGED, L -- THE AMOUNT OF THE LOAN

Complete the problems below, expressing interest rate percentages as parts of 100 in decimal form (for example, 17% would equal .17).

1) Why does the bank divide by 12 in the formula? _____

2) Compute the monthly interest on a loan of $5,000 at 14%. _____

3) What will be the total interest on this loan for 1 year? _____

4) Compute the monthly interest on a loan of $5,000 at 17% _____

5) What will be the total interest on this loan for 1 year? _____

6) Compute the monthly interest on a loan of $9,000 at 12%. _____

7) What will be the total interest on this loan for 1 year? _____

The Whatsit franchise is located in a state that has a 4% sales tax. Every three months, the Whatsit owner must send the state 4% of the total sales income. The formula is:

$$T = R \times N$$

T = STATE SALES TAX

R = RATE OF SALES TAX, N = TOTAL INCOME FROM SALES

8) A Whatsit franchise has the following monthly sales revenue: $4538, $7580, $6050. What is the amount of sales tax due the state if the tax rate is 4%? _____

9) Over a three-month period, a Whatsit franchise has the following weekly sales: $900, $950, $940, $960, $1025, $1100, $1175, $1210, $800, $820, $870 and $850. Find the amount of sales tax due the state if the tax rate is 4%. _____

10) Weekly sales figures for three months are: $1800, $1950, $2010, $1875, $1250, $1210, $1190, $1200, $1700, $1810, $1775, $1840. If the rate is 4%, what amount of sales tax is due? _____

SUNBURST COMMUNICATIONS ©1983

PREPARING FOR START-UP

This activity will give you practice in using the worksheets most important for success with the simulation.

Those worksheets are

START-UP COSTS - Worksheet 2 (One copy)
CASH ACCOUNTS - Worksheet 3 (Two copies)
INVENTORY RECORD - Worksheet 4 (One copy)

Obtain your own copies of these worksheets. Then use them with the information given to you by your teacher.

SUNBURST COMMUNICATIONS ©1983

EVALUATING THE RESULTS

Answer these questions after you have completed the simulation.

1) Did you conduct a community survey before you purchased your franchise? If you conducted a survey, did it influence your choice?

2) Did you hire the economist? If you did, when? Did you use the information the economist gave you?

3) How did you decide how many Whatsits to order and how much to charge for them?

4) Did you advertise? Why? What were the results?

5) Did any Whatsit shipments arrive late? What did you do about it? Did the late shipment change the way you placed the rest of your orders?

6) Did you have a Whatsit shortage? Did you know that it was coming? Did you do anything to prepare for it?

7) If you ran the simulation again, what would you do differently? What would you do the same?

SUNBURST COMMUNICATIONS ©1983

MASTERS FOR OVERHEAD TRANSPARENCIES

Overhead 1
THE WHATSIT CORPORATION

PRELIMINARY CHOICES

(1) Community Survey

(2) Hire Economist

(3) Buy a Franchise

(4) Take Out Loan

(5) Visit Vice President

(6) Open for Business

SUNBURST COMMUNICATIONS ©1983

Overhead 2
THE WHATSIT CORPORATION

MICRO STREET JOURNAL

ECONOMIC FORECAST FOR NEXT MONTH

Economists predict that market conditions will be poor.

BANKING NEWS

The banks announced that the prime rate will be 17%.

SUNBURST COMMUNICATIONS ©1983

MONTHLY DECISIONS

Decisions for Month 1

(1) Hire Accountant

(2) Hire Economist

(3) Hire or Lay Off Salespeople

(4) Order Inventory

(5) Pay Principal on Loan

(6) Take Out Loan

(7) Continue

SUNBURST COMMUNICATIONS ©1983

WHATSIT WAREHOUSE

Current Whatsit Prices:

QUANTITY	PRICE PER WHATSIT
0-99	$ 6.50
100-199	$ 6.30
200-299	$ 6.10
300-399	$ 5.90
400-499	$ 5.70
500-599	$ 5.50
600-699	$ 5.30
700-799	$ 5.10
800-899	$ 4.90
900-	$ 4.70

Standard Shipping Cost: $50

How many Whatsits would you like to order?

SUNBURST COMMUNICATIONS ©1983

WEEKLY DECISIONS

Decisions for Week 1, Month 1:

(1) Advertising

(2) Inventory (rush order)

(3) Set Price

(4) Take Out Loan

(5) Continue

(6) Vacation

(7) Save results to finish later

SUNBURST COMMUNICATIONS ©1983

WEEKLY REPORT

The following are figures for Week 1:

Price: **$14.00**

Sales: **100 units** **Missing/Damaged:** **1**

Revenue:		**$1400.00**
Extra Whatsits:	**$ 0.00**	
Salaries:	**$ 420.00**	
Advertising:	**$ 0.00**	
Unemployment:	**$ 0.00**	

Boss, the price is so low that everyone wants to buy. We don't have enough people to serve all the customers.

SUNBURST COMMUNICATIONS ©1983

Overhead 7
THE WHATSIT CORPORATION

REPORT FOR MONTH 1

Current sales force: 1

Total sales: 381
Missing/Damaged: ... 16

Total Revenue:	**$ 5515.00**
Salary Expense:	**$ 1680.00**
Whatsit Costs:	**$ 2700.00**
Advertising:	**$ 0.00**
Fixed Costs:	**$ 569.99**
Unemployment:	**$ 0.00**
Inventory Costs:	**$ 102.00**
Interest on Loan:	**$ 32.50**

SUNBURST COMMUNICATIONS ©1983

MASTERS FOR SIMULATION WORKSHEETS

THE WHATSIT CORPORATION WORKSHEET 1

G E N E R A L I N F O R M A T I O N

MANAGER'S SALARY_____

EACH SALESPERSON'S SALARY_____

FIXED COSTS_____

Community Survey Information

TYPE OF COMMUNITY_____

RECOMMENDED WHATSIT FRANCHISE _____

Economist Information

SALES FORMULAS

GOOD MARKET_____

MODERATE MARKET_____

POOR MARKET_____

Sales Information

	GOOD	MODERATE	POOR
MANAGER ALONE	_____	_____	_____
MANAGER +1	_____	_____	_____
MANAGER +2	_____	_____	_____
MANAGER +3	_____	_____	_____
MANAGER +4	_____	_____	_____

SUNBURST COMMUNICATIONS ©1983

THE WHATSIT CORPORATION WORKSHEET 2

S T A R T U P C O S T S

INITIAL CAPITAL	$10,000
+ LOANS	
= TOTAL STARTING CAPITAL	

COMMUNITY SURVEY COSTS	
+ FRANCHISE COSTS	
+ ECONOMISTS FEE	
= TOTAL START UP COST	

REMAINING CAPITAL .....

SUNBURST COMMUNICATIONS ©1983

THE WHATSIT CORPORATION WORKSHEET 3

C A S H A C C O U N T S

MONTH _____ Economic Conditions _____

	Starting Conditions	Week 1	Week 2	Week 3	Week 4
CASH ON HAND					
+ NEW LOANS					
+ SALES REVENUE	0				
= TOTAL CASH					
- EXPENSES MONTH 0 (fixed, int.,inv.)	0	0	0	0	0
- MISCELLANEOUS		0	0	0	0
- WHATSIT COSTS					
- SALARY EXPENSE	0				
- ADVERTISING	0				
- UNEMPLOYMENT	0				
= CASH ON HAND					

SUNBURST COMMUNICATIONS ©1983

THE WHATSIT CORPORATION WORKSHEET 4

I N V E N T O R Y R E C O R D

Month _____ Economic Conditions _____

	Starting Conditions	Week 1	Week 2	Week 3	Week 4
INVENTORY ON HAND	0				
+ ADDITIONAL INVENTORY					
= TOTAL					
- SALES	0				
- MISSING / DAMAGED	0				
= CURRENT TOTAL					

MONTH _____ Economic Conditions _____

	Starting Conditions	Week 1	Week 2	Week 3	Week 4
INVENTORY ON HAND					
+ ADDITIONAL INVENTORY					
= TOTAL					
- SALES	0				
- MISSING / DAMAGED	0				
= CURRENT TOTAL					

SUNBURST COMMUNICATIONS ©1983

THE WHATSIT CORPORATION WORKSHEET 5

S A L E S R E C O R D

MONTH _____ Economic Conditions _____

	Week 1	Week 2	Week 3	Week 4
PRICE				
SALES				
REVENUE				

MONTH _____ Economic Conditions _____

	Week 1	Week 2	Week 3	Week 4
PRICE				
SALES				
REVENUE				

MONTH _____ Economic Conditions _____

	Week 1	Week 2	Week 3	Week 4
PRICE				
SALES				
REVENUE				

SUNBURST COMMUNICATIONS ©1983

THE WHATSIT CORPORATION WORKSHEET 6

I N C O M E S T A T E M E N T

	Month 1	Month 2	Month 3
CONDITIONS			
TOTAL REVENUE			
SALARY EXPENSE			
WHATSIT COSTS			
ADVERTISING			
FIXED COSTS			
UNEMPLOYMENT			
INVENTORY COSTS			
LOAN INTEREST			
MISCELLANEOUS			
TOTAL EXPENSES			
PROFIT / LOSS			

	Month 4	Month 5	Month 6
CONDITIONS			
TOTAL REVENUE			
SALARY EXPENSE			
WHATSIT COSTS			
ADVERTISING			
FIXED COSTS			
UNEMPLOYMENT			
INVENTORY COSTS			
LOAN INTEREST			
MISCELLANEOUS			
TOTAL EXPENSES			
PROFIT / LOSS			

SUNBURST COMMUNICATIONS ©1983

THE WHATSIT CORPORATION WORKSHEET 7

B A L A N C E S H E E T

NUMBER OF WHATSITS IN INVENTORY ----------

x AVERAGE VALUE OF WHATSITS ----------
(lux.=$7.00, stan.=$6.30, bud.=$5.60)

= VALUE OF INVENTORY ----------

* *

VALUE FRANCHISE LICENSE ----------

+ CASH ON HAND ----------

+ INVENTORY ----------

= TOTAL ASSETS ----------

- OUTSTANDING LOANS ----------

= NET WORTH OF FRANCHISE ----------

SUNBURST COMMUNICATIONS © 1982

VOCABULARY LIST

Capital - The value of goods and cash that a business owns.

Demand - The quantity of a product consumers are willing to purchase at a given time and price.

Demand Function - A formula that relates the number of goods that will be sold to the price being charged.

Economist - A person who studies production, distribution, and consumption of goods.

Entrepreneur - One who is willing to take a risk in order to start a new business.

Inventory - The number of products in storage for ready access.

Inventory Cost - The cost for storing an item until it can be sold.

Law of Supply and Demand - An economic principle that states if the demand for a product exceeds the supply, the price for the product will rise and vice versa.

Mathematical Models - A formula or equation used to predict an outcome.

Potential Sales - The amount of sales one can get under ideal conditions.

Revenue - The amount of money produced by a business. In THE WHATSIT CORPORATION, revenue is received solely from the sale of WHATSITS.

Whatsit - An imaginary product sold in the simulation.

SUNBURST COMMUNICATIONS ©1983

APPLE II: WORKING WITH THE COMPUTER

1. Turn on the television monitor.

2. Insert the diskette into the disk drive with the label facing up and on the right.

3. Close the door to the disk drive.

4. Turn on the Apple II. (The on-off switch is on the back left side of the computer.)

5. You will see a red light on the disk drive turn on. If the disk drive light does not turn on in about 10 seconds, turn the Apple off and make sure your diskette is placed in correctly in the disk drive.

6. SUNBURST will appear on the screen.

7. Follow directions given in the program.

8. If at any time during the program you want to stop, hold the Control button and press the E key.

TURNING OFF THE COMPUTER:

1. Remove the diskette from the disk drive and return it to its place of storage.

2. Turn off the Apple.

3. Turn off the television or monitor.

TRS-80: WORKING WITH THE COMPUTER (diskette)

1. Insert the diskette into the disk drive with the label facing up and on the right.

2. Close the door to the drive.

3. Turn on the computer.

4. You will see a red light on the disk drive light up. If the disk drive does not turn off in about 25 seconds, turn off the TRS-80 and make sure the diskette is placed correctly in the disk drive.

5. SUNBURST will appear on the screen, followed by a menu of program.

6. Select the program you want from the menu.

7. If, at any time during the program, you want to stop, hold the SHIFT key and the down-arrow key and press the E key.

TURNING OFF THE COMPUTER:

1. Remove the diskette from the disk drive and return it to its place of storage.

2. Turn off the TRS-80.

"WHAT HAPPENS IF...?" -- SUNBURST COURSEWARE AND WARRANTY

1. What happens if a program will not load or run?

   Call us on our toll-free number and we will send you a new tape or diskette.

2. What if I find an error in the program?

   We have thoroughly tested the programs that SUNBURST carries so we hope this does not happen. But if you find an error, please note what you did before the error occured. Also, if a message appears on the screen, please write the message down. Then fill out the evaluation form and call us with the information. We will correct the error and send you a new diskette.

3. What happens if the courseware is accidently destroyed?

   SUNBURST has a lifetime guarantee on its courseware. Send us the product that was damaged and we will send you a new one.

4. How do I stop the program in the middle to go on to something new?

   A program can be ended at any time by holding the Control (Ctrl) button and pressing the E key. On the TRS:80, hold the SHIFT and "down arrow" keys while pressing the E key.

5. Can I copy this diskette?

   The material on the diskette is copyrighted. You should not copy the courseware.